REMARKS

The present amendment and remarks are in response to the non-final Office Action entered in the above identified case and mailed on March 14, 2001. Claims 17-29, 63-75 and 123-142 remain pending in the application. Claims 20, 22-29, 66, 68-75, 123-129, 133, 135, 136, 138-140, and 142 were rejected under 35 U.S.C. §112 as being indefinite. Appropriate corrections have been made with this amendment and Applicant respectfully submits that the rejected claims are now sufficiently definite to meet the requirements of 35 U.S.C. §112. The Examiner has indicated that claims 17-19, 21, 63-65, 67, 130-132, and 134 are allowed. The Examiner has further indicated that claims 20, 22-29, 66, 68-75, 123-129, 133, 135, and 136 would also be allowable, but for the §112 rejection.

Claims 137-139, 141 and 142 are subject to a statutory double patenting rejection under 35 U.S.C. §101 in light of U.S. Patent No. 6,198,770 (the '770 patent). According to the examiner, claims 137; 138; 139; 141; and 142 claim the same invention as that of claims 1 and 5; 17, and 31-33; 34, and 38; 50, 55, and 56; and 67 of the '770 patent respectively. Applicant has canceled claim 142. With respect to claims 137-139 and 141 Applicant respectfully traverses.

In determining whether a statutory double patenting rejection is in order, it is necessary to determine whether the claims of the application claim the same invention as claimed in the issued patent. According to §804A of the MPEP, "same invention" means identical subject matter. Applicant wishes to point out that the scope of the rejected claims is not commensurate with the claims cited in the '770 patent. For example, claim 137 of the application includes "means for outputting the corrected data as the image data of the second hierarchy in accordance with the determined result." This element is not found in claim 1 of the '770 patent. Further, although a similar means is present in claim 5 of the '770 patent, claim 5 is a dependent claims that includes all of the limitations of intervening claim 4. Many, if not all of the limitations of

claim 4 of the '770 patent are not present in claim 137 of the application. Thus, the scope of claim 137 of the application is not commensurate with that of either claim 1 or claim 5 of the '770 and the to two are patentably distinct.

A similar situation arises with regard to claim 138 of the application and claims 17 and 31-33 of the '770 patent. Claim 138 of the application includes "means for outputting the corrected data as the image data of the third hierarchy in accordance with the determined result." This element is not found in claim 17 of the '770 patent. Further, although a similar means is present in claim 33 '770 patent, claim 33 is a dependent claim that includes all of the limitations of intervening claims 31 and 32. Many, if not all of the limitations of claims 31 and 32 of the '770 patent are not present in claim 138 of the application. Thus, the scope of claim 138 of the application is not commensurate with that of claims 17, or 31-33 of the '770 patent and the two are patentably distinct.

The same situation repeats with claims 139 and 141 of the application and claims 34 and 38; 50, 55, and 56 of the '770 patent. The claims of the application contain elements not found in the base claims of the patent, and a dependent claim of the patent that includes similar features to those in claims of the application but absent from the base claim of the patent includes elements of intervening claims that are not included in the claims of the application. The scope of the claims of the application is not the same as the scope of the claims of the patent, and the two are patentably distinct.

Applicant respectfully submits that all of the pending claims are now in condition for allowance and requests that the Examiner allow the application to issue. However, if there are any remaining issues the Examiner is encourage to call Applicant's attorney, Jeffrey H. Canfield at (312) 807-4233 in order to facilitate a speedy disposition of the present case.

If any additional fees are required in connection with this response they may be charged to deposit account no. 02-1818.

Respectfully Submitted,

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ATTACHMENT A

20. An apparatus according to claim 17, wherein the mapping coefficients for each class are generated so that [the] a predicted error between predicted data of the image data of the first hierarchy for learning predicted using the image data of the second hierarchy and the image data of the first hierarchy for learning is minimum.

22. An apparatus according to claim 17, wherein the mapping for each class is generated by the steps of:

extracting a plurality of pixels of image data of a first hierarchy for learning and generating class information corresponding to the characteristics of the extracted plurality of pixels;

predicting image data of the second hierarchy where a number of pixels for the image data of the first hierarchy for learning is reduced using the image data of the first hierarchy for learning and mapping coefficients corresponding to the class information;

predicting the image data of the first hierarchy for learning in accordance with the coded data and generating predicted data having a plurality of predicted pixels;

generating a predicted error of the predicted data of the image of the first hierarchy for learning with respect to the image data of the first hierarchy for learning;

updating the mapping coefficients in accordance with the predicted error until the mapping coefficients are optimum mapping coefficients; and

determining the optimum mapping coefficients.

23. An apparatus according to claim 17, wherein the mapping for each class is generated by the steps of:

forming an image data of the second hierarchy having a number of pixels that is smaller than that of an image data of the first hierarchy for learning;

correcting the image data of the second hierarchy and generating a corrected data;

predicting the image data of the first hierarchy for learning in accordance with the corrected data and generating a predicted data of the first hierarchy for learning having a plurality of predicted pixels;

calculating [the predictive] <u>a predicted</u> error of the predicted data of the first hierarchy for learning with respect to the image data of the first hierarchy;

determining suitability of the corrected data in accordance with the predicted error;

repeating the correcting [operation] <u>step</u> until the corrected data is an optimum corrected data; and

generating optimum mapping coefficients for each class using the image data of the first hierarchy for learning and the optimum corrected data.

24. An apparatus for decoding a coded data hierarchical coding an image data comprising:

means for receiving the coded data including at least image data of [the] <u>a</u> second hierarchy, the image data of the second hierarchy having a number of pixels which is smaller than that of an image data of the first hierarchy; and

means for decoding the image data of [the] <u>a</u> first hierarchy from image data of the second hierarchy,

said coded data generated by the steps of:

extracting a plurality of pixels of an image data of a first hierarchy and generating class information corresponding to characteristics of the extracted plurality of pixels; and

reading mapping coefficients corresponding to the class information from a memory in which mapping coefficients for each class are stored and predicting an image data of the second hierarchy using the image data of the second hierarchy having a number of pixels which is smaller than that of the image data of the first hierarchy.

66. A method according to claim 63, wherein the mapping coefficients for each class are generated so that [the] <u>a</u> predicted error between predicted data of the image data of the first hierarchy for learning predicted using the image data of the second hierarchy and the image data of the first hierarchy for learning is minimum.

68. A method according to claim 63, wherein the mapping for each class is generated by the steps of:

extracting a plurality of pixels of image data of a first hierarchy for learning and generating class information corresponding to the characteristics of the extracted plurality of pixels;

predicting image data of the second hierarchy where a number of pixels for the image data of the first hierarchy [for learning] <u>is greater than a number of pixels for the image data of the second hierarchy</u> using the image data of the first hierarchy [for learning] and mapping coefficients corresponding to the class information;

predicting the image data of the first hierarchy [for learning] in accordance with the [coded] image data of the second hierarchy and generating predicted data having a plurality of predicted pixels;

generating a predicted error of the predicted data of the image of the first hierarchy [for learning] with respect to the image data of the first hierarchy [for learning];

updating the mapping coefficients in accordance with the predicted error until the mapping coefficients are optimum mapping coefficients; and

determining the optimum mapping coefficients.

69. A method according to claim 63, wherein the mapping for each class is generated by the steps of:

forming [an] image data of the second hierarchy having a number of pixels that is smaller than that of [an] image data of the first hierarchy [for learning];

correcting the image data of the second hierarchy and generating [a] corrected data;

predicting the image data of the first hierarchy [for learning] in accordance with the corrected data and generating [a] predicted data of the first hierarchy [for learning] having a plurality of predicted pixels;

calculating [the predictive] a predicted error of the predicted data of the first hierarchy [for learning] with respect to the image data of the first hierarchy;

determining suitability of the corrected data in accordance with the predicted error;

repeating the correcting [operation] step until the corrected data is [an] optimum [corrected data]; and

generating optimum mapping coefficients for each class using the image data of the first hierarchy [for learning] and the optimum corrected data.

70. A method of decoding a coded data hierarchical coding an image data comprising:

receiving the coded data including at least image data of [the] a second hierarchy, the image data of the second hierarchy having a number of pixels which is, smaller than that of an image data of [the] a first hierarchy; and

decoding the image data of the first hierarchy from image data of the second hierarchy,

said coded data generated by the steps of:

extracting a plurality of pixels of an image data of a first hierarchy and generating class information corresponding to characteristics of the extracted plurality of pixels; and

reading mapping coefficients corresponding to the class information from a memory in which mapping coefficients for each class are stored and predicting an image data of the second hierarchy using the image data of the second hierarchy having a number of pixels which is smaller than that of the image data of the first hierarchy.

73. A method according to claim 70, wherein

the mapping coefficients for each class are generated using an image data for learning.

74. A method according to claim 70, wherein

the mapping coefficients for each class are generated so that predicted error between predicted data of the image data of the first hierarchy for learning [is] predicted using the image data of the second hierarchy and the image data of the first hierarchy for learning is minimum.

75. A method according to claim 70, wherein

the mapping coefficients for each class are generated so that predicted error between predicted data of the image data of the first hierarchy for learning [is] predicted using image data of the second hierarchy and the image data of the first hierarchy for learning is less than prescribed threshold values.

123. A method of transmitting hierarchically coded image data, the method comprising:

receiving the hierarchically coded image data, and

transmitting the hierarchically coded image data,

wherein the hierarchically coded image data has been formed by steps of:

extracting a plurality of pixels of image data of a first hierarchy and generating class information corresponding to characteristics of the extracted plurality of pixels;

storing mapping coefficients for each class; and

reading mapping coefficients corresponding to the class information and predicting image data of a second hierarchy using the image data of the first hierarchy and the read mapping coefficients, the image data of the second hierarchy having a number of pixels which is smaller than that of the image data of the first hierarchy.

126. The method according to claim 123, wherein the mapping coefficients for each class are generated so that [the] a predicted error between predicted data of the image data of the first hierarchy for learning predicted using the image data of the second hierarchy and the image data of the first hierarchy for learning is minimum.

128. The method according to claim 123, wherein the mapping for each class is generated by the steps of:

extracting a plurality of pixels of image data of a first hierarchy for learning and generating class information corresponding to the characteristics of the extracted plurality of pixels;

predicting image data of the second hierarchy where a number of pixels for the image data of the first hierarchy for learning is greater than a number of pixels for the image data of the second hierarchy using the image data of the first hierarchy for learning and mapping coefficients corresponding to the class information;

predicting the image data of the first hierarchy for learning in accordance with the coded data and generating predicted data having a plurality of predicted pixels;

generating a predicted error of the predicted data of the image of the first hierarchy for learning with respect to the image data of the first hierarchy for learning;

updating the mapping coefficients in accordance with the predicted error until the mapping coefficients are optimum mapping coefficients; and

determining the optimum mapping coefficients.

129. The method according to claim 123, wherein the mapping for each class is generated by the steps of:

forming an image data of the second hierarchy having a number of pixels that is smaller than that of an image data of the first hierarchy for learning;

correcting the image data of the second hierarchy and generating a corrected data;

predicting the image data of the first hierarchy for learning in accordance with the corrected data and generating a predicted data of the first hierarchy for learning having a plurality of predicted pixels;

calculating [the predictive] <u>a predicted</u> error of the predicted data of the first hierarchy for learning with respect to the image data of the first hierarchy;

determining suitability of the corrected data in accordance with the predicted error;

repeating the correcting [operation] <u>step</u> until the corrected data is an optimum corrected data; and

generating optimum mapping coefficients for each class using the image data of the first hierarchy for learning and the optimum corrected data.

133. The article of manufacture according to claim 130, wherein the mapping coefficients for each class are generated so that [the] a predicted error between predicted data of the image data of the first hierarchy for learning predicted using the image data of the second hierarchy and the image data of the first hierarchy for learning is minimum.

135. The article of manufacture according to claim 130, wherein the mapping for each class is generated by the steps of:

extracting a plurality of pixels of image data of a first hierarchy for learning and generating class information corresponding to the characteristics of the extracted plurality of pixels;

predicting image data of the second hierarchy where a number of pixels for the image data of the first hierarchy for learning is greater than a number of pixels for the image data of the second hierarchy using the image data of the first hierarchy for learning and mapping coefficients corresponding to the class information;

predicting the image data of the first hierarchy for learning in accordance with the coded image data and generating predicted data having a plurality of predicted pixels;

generating a predicted error of the predicted data of the image of the first hierarchy for learning with respect to the image data of the first hierarchy for learning;

updating the mapping coefficients in accordance with the predicted error until the mapping coefficients are optimum mapping coefficients; and

determining the optimum mapping coefficients.

136. The article of manufacture according to claim 130, wherein the mapping for each class is generated by the steps of:

forming an image data of the second hierarchy having a number of pixels that is smaller than that of an image data of the first hierarchy for learning;

correcting the image data of the second hierarchy and generating a corrected data;

predicting the image data of the first hierarchy for learning in accordance with the corrected data and generating a predicted data of thefirst hierarchy for learning having a plurality of predicted pixels;

calculating [the predictive] a predicted error of the predicted image data of the first hierarchy for learning with respect to the image data of the first hierarchy;

determining suitability of the corrected data in accordance with the predicted error;

repeating the correcting operation until the corrected data is an optimum corrected data; and

generating optimum mapping coefficients for each class using the image data of the first hierarchy for learning and the optimum corrected data.

138. (Amended) An apparatus for performing a hierarchical coding; comprising:

means for forming an image data of a second hierarchy having a number of pixels which is smaller than that of an image data of a first hierarchy;

means for forming an image data of a third hierarchy having a number of pixels which is smaller than that of an image data of the second hierarchy;

means for correcting the image data of the third hierarchy and generating a corrected data of the third hierarchy;

first predicting means for generating [predicted data] a prediction value of the second hierarchy, having a plurality of pixels, in accordance-with the corrected data of the third hierarchy;

second predicting means for generating a prediction value of the first hierarchy, having a plurality of pixels, in accordance with the prediction value of the second hierarchy;

error generating means for generating a predicted error of the prediction value of the first hierarchy with respect to the image data of the first hierarchy;

means for determining suitability of the corrected data of the third hierarchy in accordance with the predicted error; and

means for outputting the corrected data as the image data of the third hierarchy in accordance with the determined result.

139. (Amended) A method of performing a hierarchical coding, comprising:

forming an image data of a second hierarchy having a number of pixels which is smaller than that of an image data of a first hierarchy;

correcting the image data of the second hierarchy and generating a corrected data;

predicting the image data of the first hierarchy in accordance with the corrected data and generating a predicted data of the first hierarchy having a plurality of predicted pixels;

calculating [predictive] <u>a predicted</u> error of the predicted data of the first hierarchy with respect to the image data of the first hierarchy;

determining suitability of the corrected data in accordance with the predicted error; and

outputting the corrected data as the image data of the second hierarchy in accordance with the determined result.

140. (Amended) [The method of claim 57, and further comprising:]

A method of decoding data represented by a hierarchical coding of an image, comprising:

receiving the coded data including at least image data of a second hierarchy having a number of pixels which is smaller than that of an image data of a first hierarchy;

decoding the image data of the first hierarchy from image data of the second hierarchy by steps of:

forming the image data of the second hierarchy and generating a corrected data;

predicting the image data of the first hierarchy in accordance with the corrected data and generating a predicted data of the first hierarchy having a plurality of predicted pixels;

calculating [predictive] <u>a predicted</u> error of the predicted data of the first hierarchy with respect to the image data of the first hierarchy;

determining suitability of the corrected data in accordance with the predicted error;

repeating the [correcting operation] <u>step of generating corrected data</u> as necessary until the corrected data becomes an optimum corrected data; and

outputtting the optimum corrected data as the image data of the second hierarchy.